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ADAMS & WILKS
ATTORNEYS AND COUNSELORS AT LAW
31st FLOOR
50 BROADWAY
NEW YORK, NY 10004

EXAMINER	
MULLER, BRYAN R	

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/670,722
Filing Date: September 25, 2003
Appellant(s): KUME ET AL.

Bruce L. Adams
Attorney
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 5/15/2006 appealing from the Office action mailed 9/8/2005.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

GROUNDS OF REJECTION NOT ON REVIEW

The following grounds of rejection have not been withdrawn by the examiner, but they are not under review on appeal because they have not been presented for review

in the appellant's brief. In the final office action mailed on 9/8/2005, the examiner rejects independent claims 21 and 28 (and in doing so all claims that depend thereon) under 35 U.S.C. 112, first and second paragraphs for failing to comply with the enablement requirement and for failure to particularly point out and distinctly claim the subject matter which the applicant regards as the invention. Independent claim 21 and 28 both claim that the ferrule and optical fiber rotate in a second direction opposite to the first direction of rotation but the specification fails to disclose what causes this rotation to occur or any structure that would create such rotation, therefore the claim that the ferrule and optical fiber rotate in an opposite direction lacks enablement and it is unclear how the ferrule and optical fiber rotate in an opposite direction. The examiner further rejects claims 35 and 37 under 35 U.S.C. 112, first and second paragraphs for failing to comply with the enablement requirement and for failure to particularly point out and distinctly claim the subject matter which the applicant regards as the invention because both claims 35 and 37 claim "mounting means". However, there is no "mounting means" disclosed in the specification to provide the necessary support for 35 U.S.C 112, sixth paragraph, thus claims 35 and 37 also lack enablement and it is unclear what the applicant is intending to claim by using the term "mounting means".

(7) Claims Appendix

Claims 35-38 contain(s) substantial errors as presented in the Appendix to the brief. Accordingly, claims 35-38 are correctly written in the Appendix to the Examiner's Answer. The applicant listed claims 35-38 in the Appendix to the brief as amended after

the final rejection made on 9/22/2005. The Examiner has listed claims 35-38 as they were presented by the applicant in amendments filed 2/17/2005 and as finally rejected. The corrected claims 35-38 are as follows:

35. A combination according to claim 21; further comprising mounting means for mounting the holding member in the holding part of the jig plate so that during a polishing operation, the holding member supports the optical connector plug in the holding part so that a longitudinal axis of the ferrule fixed to the end of the optical fiber is disposed at an obtuse angle relative to the polishing surface of the polishing member.

36. A combination according to claim 35; wherein the mounting means comprises a holding hole of the holding part for receiving the holding member so that a longitudinal axis of the holding member is disposed at the obtuse angle relative to the polishing surface of the polishing member during a polishing operation.

37. A jig plate according to claim 28; further comprising mounting means for mounting the holding member in the holding part so that during a polishing operation, the holding member supports the optical connector plug in the holding part so that a longitudinal axis of the ferrule fixed to the end of the optical fiber is disposed at an obtuse angle relative to the polishing surface of the polishing member.

38. A jig plate according to claim 37; wherein the mounting means comprises a holding hole of the holding part for receiving the holding member so

that a longitudinal axis of the holding member is disposed at the obtuse angle relative to the polishing surface of the polishing member during a polishing operation.

(8) Evidence Relied Upon

Yamada et al. "Ferrule Holder Assembly for Optical-Fiber-End-Face Grinding Apparatus" United States Patent Application Publication, Pub. No. US 2001/0055459 A1 (Dec 27, 2001), figures 2-8 and paragraphs 4, 9, 10, 13)

5,738,576	Ohno et al.	4-1998

(9) Grounds of Rejection

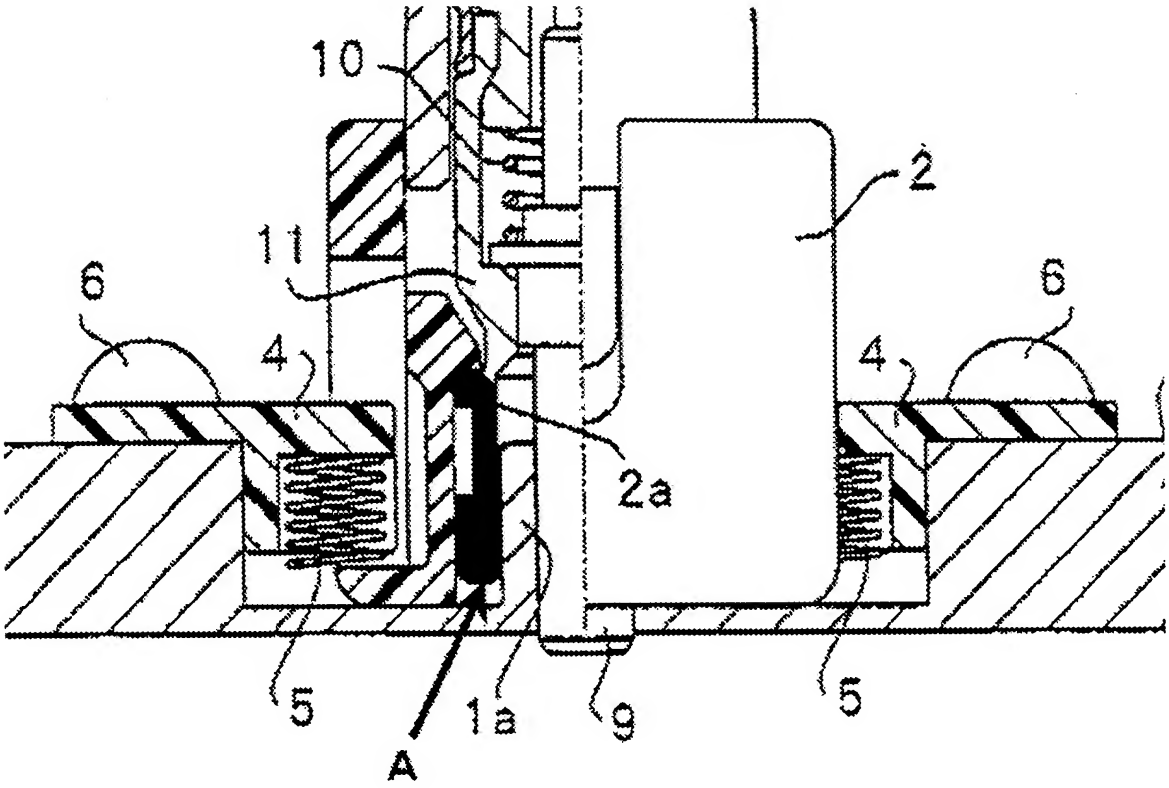
The following ground(s) of rejection are applicable to the appealed claims:

1. Claims 21-24, 28-31 and 35-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al (2001/0055459) in view of Ohno et al (5,738,576).

2. In reference to claims 21 and 28, Yamada discloses in combination an optical connector plug comprised of a plug housing (8, 27) for supporting a ferrule (9) fixed to an end of an optical fiber and a connecting member (Highlighted portion A from figure 3, shown below; **21** in Figure 7) connected to an exterior surface of the plug housing, the optical connector plug having a first axis extending along the exterior surface thereof in a longitudinal direction of the connecting member, an end face polishing machine comprised or a polishing member (14) having a polishing surface for undergoing

rotational movement (paragraph 32) in a first direction of rotation to polish an end face of the ferrule and an end face of the optical fiber during a polishing operation and a jig plate comprised of a jig plate body (1), a mounting part (the mounting part is made up of the edges of the jig plate body that interact with parts 17 to mount the jig plate to the polishing machine) connected to the jig plate body for mounting the jig plate on the end face polishing machine, a holding part (the holding part is the recess in the jig plate body wherein the holding member is located) formed in a surface of the jig plate body, and a holding member (4, 2 and 2a) for removably supporting the optical connector plug in the holding part so that the end face of the ferrule and the end face of the optical fiber confront the polishing surface of the polishing member when the jig plate is mounted on the end face polishing machine, the holding member having an engaging portion (2, 2a) for detachable engagement with the connecting member of the optical connector plug to removably support the optical connector plug so that during a polishing operation, the end face of the ferrule and the end face of the optical fiber contact the polishing surface of the polishing member at a preselected angle (figure 6) of inclination and while an axis extending in the direction of inclination of the end face of the ferrule and the end face of the optical fiber coincides with a second axis of the optical connector plug disposed generally orthogonal to the first axis. Yamada, however, fails to disclose that the ferrule rotates in a second direction of rotation opposite to the first direction of rotation. Ohno teaches that it is advantageous to provide a convex tip on optical fibers in order to minimize optical losses ascribable to the gap between the ends of fibers (col. 1, lines 19-27) and a method of producing a convex surface may include a rotary stage with an

elastic sheet with an abrasive grain applied to the sheet and the act of rotating a ferrule containing an optical fiber having a conical end about its axis in the opposite direction of the rotation of the rotary stage (figs. 2A and 2B) while the end of the ferrule and fiber are pressed against the rotating sheet. This method produces a convex curve that is inclined with respect to a plane perpendicular to the axis of the ferrule and optical fiber (figs. 1, 2A, 2B, 5A and 5B of Ohno). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to provide the jig plate of Yamada with the ability to rotate a ferrule containing an optical fiber which is angled to correct the target inclining direction about its axis in the opposite direction of the rotation of the rotating polishing plate, while contacting the rotating polishing plate in order to create a smooth convex surface with the convex curve inclined with respect to a plane perpendicular to the axis of the ferrule and optical fiber in order to minimize the optical losses ascribable to the gap between the ends of the optical fibers therefore making the fibers more efficient in transmission of data.



Partial view of Fig. 3

3. In reference to claim 22, Yamada further discloses that the second axis of the optical connector plug extends along an exterior surface of the optical connector plug different from the exterior surface thereof to which the connector member is connected.

4. In reference to claims 23 and 29, Yamada further discloses that the connecting member may comprise a latch (27 in figure 7) and that the holding member has a holding hole having the engaging portion for detachable engagement with the latch to removably support the optical connector plug.

5. In reference to claims 24 and 30, Yamada further discloses that the holding member is removable mounted in the holding part.

6. In reference to claims 35 and 37, Yamada further discloses mounting means (6) for mounting the holding member in the holding part of the jig plate so that during a polishing operation, the holding member supports the optical connector plug in the holding part so that a longitudinal axis of the ferrule fixed to the end of the optical fiber is disposed at an obtuse angle (figure 6) relative to the polishing surface of the polishing member.

7. In reference to claim 36 and 38, Yamada further discloses that the mounting means comprises a holding hole of the holding part for receiving the holding member so that a longitudinal axis of the holding member is disposed at the obtuse angle relative to the polishing surface of the polishing member during a polishing operation.

(10) Response to Argument

A. Arguments for Independent Claims 21 and 28

1. Applicant first argues (on page 10, lines 7-19) that the Yamada reference doe not have any structure which permits the ferrule to undergo rotation in a direction opposite to the direction of rotation of the polishing member.

In response, the examiner agrees that Yamada does not disclose any structure which permits the ferrule to undergo rotation in a direction opposite to the direction of rotation of the polishing member and that the Ohno reference is provided as a secondary reference to teach the need and motivation to provide the Yamada reference with a means for rotating the ferrule in a direction opposite to the direction of rotation of the polishing member.

2. Applicant further argues (on page 10, line 20 thru page 12, line 7) that the structure of the Yamada reference fails to meet the claimed structure because the "engaging portion" (2 and 2a of Yamada, as disclosed by the examiner) is not a part of the holding member (4 of Yamada, as disclosed by the examiner).

In response, the examiner argues that although portions 2 and 2a of the Yamada reference are not integral parts of the holding member (4), they are necessary parts that make the holding member function to removably support the optical connector plug in the holding part and that parts 2 and 2a would inherently be inserted and removed to and from the jig plate with holding member 4 as a combined structure, as seen in figures 4 and 5. Therefore, the engaging portion (2 and 2a) must be considered to be a part of the holding member because the holding member would not function to removably support the connector plug without the engaging portion.

3. Applicant further argues (on page 12, lines 8-19) that the examiner's reference to figure 2b of the Ohno reference is inapplicable to the teaching of rotation of the ferrule in an opposite direction to the polishing surface because the figure shows rotation of the ferrule and polishing surface in the same direction.

In response, the examiner agrees that figure 2B of Ohno shows rotation in the same direction. However, the examiner only referenced figure 2B as part of the prior art polishing process discussed by Ohno, which includes figure 2A, which does disclose rotation in opposite directions. Therefore, the examiner maintains the rejection on the basis that the Ohno reference, as a whole, teaches rotation of the ferrule in the opposite

direction to the polishing surface to be a desired production step in a method for polishing the end face of optical fibers, as will be discussed in more detail below.

4. The applicant further argues (on page 12, line 20 thru page 13, line 15) that it is unclear how the examiner proposes to modify the jig plate of Yamada in view of Ohno to arrive at the claimed invention.

In response, the applicant's argument with reference to the claimed rotation is noted and it is also noted that neither the applicant's specification nor drawings support the claimed subject matter. At most, fig. 8a of the present application supports eccentric motion without any structure (i.e. motor or driving means) disclosed in the specification or drawings. Therefore, the examiner has taken the broadest reasonable interpretation of the claimed recitation and has referenced the teachings of Ohno to disclose that such rotation is prior knowledge in the art and provide motivation to modify the Yamada reference in such a way as to allow or impose rotation of the ferrule in the opposite direction to the polishing surface. Because the applicant fails to disclose or claim any structure that provides the rotation of the ferrule in the opposite direction to the polishing surface, the mere teaching and motivation to provide the Yamada reference with any structure that would allow this rotation is sufficient to reject the claimed limitations.

5. The applicant further argues (on page 13, line 16 thru page 15, line 24) that the teaching of Ohno is not adequate to support the rejection under 35 U.S.C. 103 because the Ohno reference teaches away from the prior art method and structure represented in figures 2A and 2B.

In response, the examiner maintains the rejection on the basis that figures 2A and 2B of Ohno are disclosed as a conventional method for providing an optical fiber with a smooth, mirror-finished convex tip (col. 3, lines 53-60 and col. 4, lines 12-15). Ohno discloses that the conventional method includes a first step, represented by figure 2A, of grinding the ferrule while the ferrule is being rotated in a direction opposite to the direction of rotation of the grinding surface and a second step, represented by figure 2B, of grinding the ferrule while rotating the ferrule in the same direction of rotation as a second grinding surface that comprises an elastic sheet. Thus, Ohno discloses the step of rotating the ferrule in an opposite direction to the direction of rotation of the polishing surface while the ferrule and polishing surface contact one another as a prior art method that is conventionally known to one of ordinary skill in the art, and provides the motivation to use this method by disclosing that the method provides a smooth, mirror-finished convex tip (col. 4, lines 12-15). Although Ohno does disclose that the prior art method may have some problems yet to be solved, the method is still known as being a conventional and acceptable method for providing an optical fiber with a smooth convex tip. Further, the only problems disclosed by the Ohno reference with regards to the prior art method, refer to the elastic sheet in the second step, represented by figure 2B, to which Ohno provides a more desirable second method step. However, Ohno does not discuss any problems with the conventional first method step of grinding the ferrule while the ferrule is being rotated in a direction opposite to the direction of rotation of the grinding surface so tit may be assumed that the Ohno reference still comprises this first method step and merely replaces the second method step in the conventional method.

Thus, still making it desirable to provide the Yamada reference with a means to rotate the ferrule in an opposite direction to the rotational direction of the polishing surface, as disclosed by Ohno.

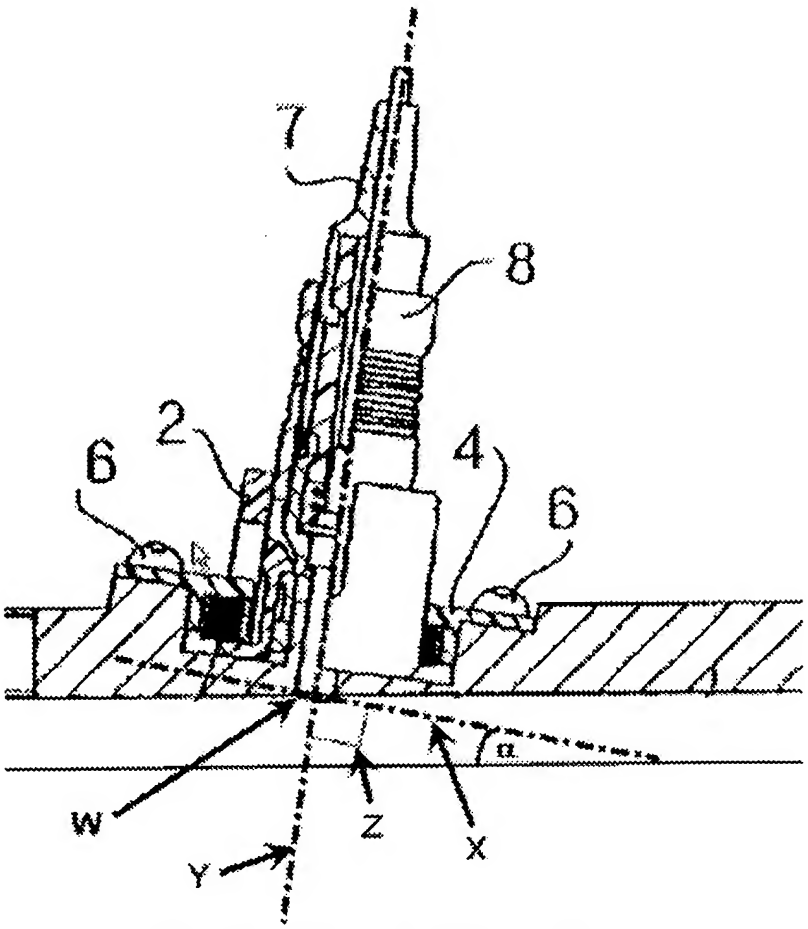
6. Applicant further argues (on page 16) that the combination of the Ohno and Yamada references do not lead to the structural combination recited in claim 21 because Yamada does not disclose a holding member having the engaging portion for performing the specific function recited in claim 21 and because Ohno clearly does not disclose or suggest the specific structure of the jig plate recited in claim 21, including its mounting part, holding part, holding member and the recited structural and positional relationship between these components.

In response, the examiner maintains the argument that Yamada does disclose a holding member having the engaging portion for performing the specific function recited in claim 21, as discussed supra (argument 2) and agrees that Ohno does not disclose the specific structures, or structural and positional relationships set forth in claim 21. However, Yamada does disclose all of the specific structure of the jig plate recited in claim 21, including its mounting part, holding part, holding member and the recited structural and positional relationship between these components and the Ohno reference is merely provided as motivation to modify the structure disclosed by Yamada to provide the claimed rotational relationship between the ferrule and the polishing surface, also discussed supra.

7. The applicant further argues (on page 17, line 1 thru page 21, line 6) that the combination of the Yamada and Ohno references fail to disclose the claimed

positional relationship between the end faces of the ferrule and optical fiber and the polishing member and the positional relationships between the axis corresponding to the end faces of the ferrule and optical fiber and the axes corresponding to the optical connector plug and connecting member of the optical connector plug and that the examiner improperly relies upon various different and unrelated embodiments of Yamada and without providing proper motivation for modification of such unrelated embodiments.

In response to the positional relationships claimed by the applicant, the examiner maintains the rejection on the basis that Yamada does disclose the claimed positional relationships. The applicant claims that end face of the ferrule and the end face of the optical fiber contact the polishing surface of the polishing member at a preselected angle (α) of inclination and while an axis (X) extending in the direction of inclination of the end face of the ferrule and the end face of the optical fiber coincides with a second axis (X) of the optical connector plug disposed generally orthogonal (shown at Z) to the first axis (Y).



Partial View of Fig. 6

In response to the argument that the examiner improperly relies upon various different and unrelated embodiments of Yamada and without providing proper motivation for modification of such unrelated embodiments, the examiner maintains the rejections on the basis that the examiner refers to figure 3 or 6 (both of which are the same embodiment) of Yamada to provide structure for all claimed limitations regarding the connector plug and holding member from figure 3 of Yamada, which is the same connector plug and holding member shown, disposed at an angle, in figure 6. Thus, the combination of the Ohno reference with the single embodiment of Yamada shown in

figures 3 and 6 provide all of the structure claimed by the applicant. Further, the examiner merely cites structural features of additional embodiments of Yamada as further support that multiple embodiments disclosed by Yamada provide the structure claimed by the applicant and although it is not specifically disclosed by Yamada, it would have been obvious that other embodiments of the connector plug and holding member disclosed by Yamada may be positioned on the jig plate at an angle as shown in figure 6. The jig plate in figure 6 comprises a recess that is set at an angle relative to the planar base of the jig plate and as can be seen in figure 6, the recess is shaped such that it may receive the same connector plug and holding member that is positioned upright in figure 3. Therefore it would have been obvious that any of the embodiments disclosed by Yamada, all of which are designed to be easily removed from and attached to the jig plate by connectors (6), may be placed in the recess shown in figure 6 to position the connector plug and holding member at an angle relative to the planar base of the jig plate for the same reasons that the connector plug and holding member embodiment of figure 3 is shown positioned at an angle. Further, Yamada discloses that the hole, shown in figure 6, for inserting the adapter 2 is processed to be inclined corresponding to the grinding angle (paragraph 39, lines 7-9). Therefore, it would further be obvious that either adapter, numbered 2, such as the adapter shown in figure 3 or the adapter shown in figure 7, may be inserted into the hole.

It is also noted, with reference to the footnote on page 19, that the examiner did intend to refer to reference numeral 21 as the connecting member in figure 7, not reference numeral 27.

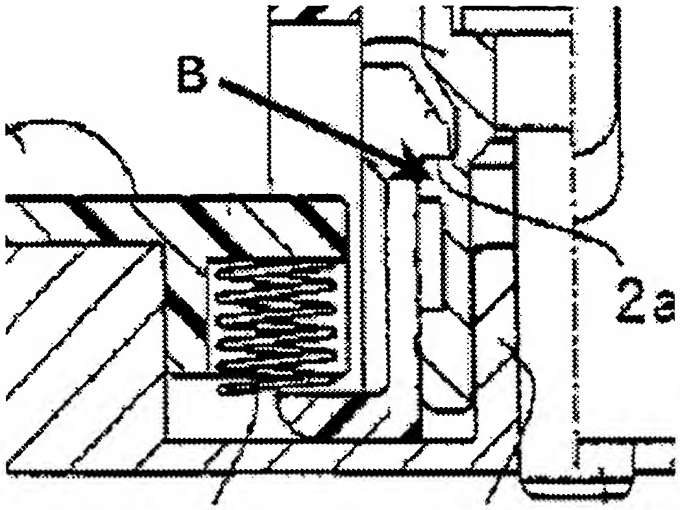
8. The applicant further argues (on page 21, line 7 thru page 22, line 6) that it is unclear what structure the examiner refers to in figure 6 as the connecting member or how the structures of Yamada meet the limitations of claim 21 with respect to the positional relationship of the claimed structure.

In response, the examiner has provided the figures, shown above, to support the prior arguments made by the examiner and to more clearly define the examiner's interpretation of the Yamada reference with respect to the applicant's claimed limitations.

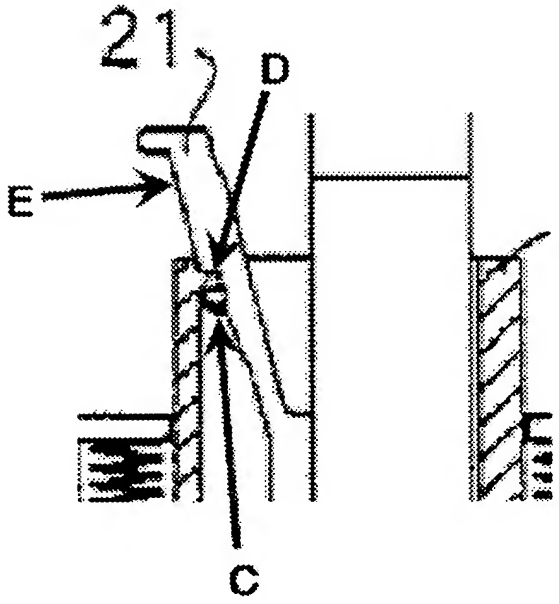
9. In reference to claim 28, the applicant makes all of the same or similar arguments made, and discussed supra, in reference to claim 21. The examiner maintains the same opinion for all arguments relating to clam 28 as discussed supra, relating to claim 21.

10. Finally, in reference to dependent claims 22-24, 29-30 and 35-38, the applicant argues that no structure is provided by the prior art that corresponds to the claimed limitations, in claims 23 and 29, that the connecting member comprises a latch and that the holding member has a holding hole having the engaging portion for detachable engagement with the latch to removably support the optical connector plug. However, figures 3 (and 6) and 7 all have structure that corresponds to the above limitations of the connecting member comprising a latch (B of figures 3 and 6; 21 of figure 7). The definition of latch is "fastening typically consisting of a bar that fits into a notch or slot and is lifted from either side by a lever or string", and the portion B, shown below, is clearly a bar that fits into a notch or slot, of portion 2a, that in this case is lifted

from above by the rest of the connector plug body, which acts as an extension lever and portion 21 of figure 7 comprises bar (C) that fits into notch (D) and is lifted by lever (E) as shown below. Figures 3, 6 and 7 also disclose that the holding member (4, 2 and 2a as discussed supra) has a holding hole (in which the connector plug is placed) that has the engaging portion (2a of figures 3 and 6; D of figure 7)) for detachable engagement with the latch, located therein, to removably support the optical connector plug.



Patial view of Fig. 3



Partial view of Fig. 7

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Bryan R. Muller

6/20/06

Conferees:

Joseph J. Hail III and Derris H. Banks

Joseph J. Hail, III
Supervisory Patent Examiner
Technology Center 3700